HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
CHARLES HARRINGTON, M.D.,
ASSISTANT PROFESSOR OF HYGIENE, HARVARD MEDICAL SCHOOL,
AND
EDWARD F. WILLOUGHBY, M.D.,
OF LONDON.

Dissemination of Bacteria by Ordinary Air Currents.—An extensive series of experiments by DR. R. F. HUTCHISON (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxv., p. 223) on the dissemination of bacteria in indoor and outdoor air and on the transmission of infection by mail yielded some interesting results. The organism used was *B. prodigiosus*, cultures of which, diluted with water, were sprayed into the air. A closed book with matches placed between the leaves so as to make openings 5 mm. in height, into which slips of sterile paper were inserted, was exposed for two hours at a distance of about eight feet from the place where the organisms were discharged into the air of the room, and then the papers were withdrawn and planted. The results were positive. Sheets of paper were exposed to the air and then placed in sterile envelopes and sent away by mail to both near and distant points, from which, without having been opened, they were immediately returned. In one case the round trip required twenty hours; in the other, six days. The sheet which made the shorter journey yielded an abundance of the organisms, but the other gave negative results. Hence infection by mail is possible, but the duration of life of the transmitted organism will, of course, depend upon the individual resistance of the particular species. Two sterilized sheets sent over the same routes and returned unopened as before, yielded in both cases a number of colonies of bacteria and moulds, thus showing that infection of letters in transit is, to some extent, possible.

Bacteria sprayed upon objects in the form of minute droplets were found to perish in a short time, the main factor in their destruction being the influence of sunlight. On Petri plates protected from the light, *B. prodigiosus* was found active after seven days, while in those exposed to it for one or two days no living organisms were found. Wall-papers, especially those with a rough surface or raised patterns, may become extensively infected in a very short time from an atmosphere into which bacteria are discharged by spraying, but most of the organisms were found to live but a short time.

When the air of the room was allowed to remain undisturbed, most of the organisms were found to have settled out within half an hour; but it was observed that slight unavoidable air currents in the lower strata will keep numbers of them in suspension for considerable periods. Other factors which may influence the length of time bacteria may remain in suspension are the amount of moisture present and the size and specific gravity of the organisms. Provided the air currents are favorable, suspended bacteria may be conducted through very narrow crevices. Thus Petri dishes placed in closed bureau drawers became infected, the organisms having been conveyed through the surrounding chinks.

Experiments were performed to ascertain to what extent bacteria resting upon the floor and in the cracks between the boards thereof are thrown into the upper air by the act of walking, and it was found that those thrown up by the elastic rebound of the boards failed to infect plates suspended at a height of 10 cm., while those much nearer were extensively infected. Other experiments proved the passage of bacteria from one room to another through the keyhole and crevices of the closed door leading from one to the other. While the danger of disseminating bacteria by walking over an infected floor was shown to be slight, ordinary sweeping was found to contaminate the atmosphere through its whole extent, even to the ceiling; hence, dry sweeping is to be carefully avoided in the sick-room. Rapid passage from an infected atmosphere in a straight line will draw bacteria along through considerable distances. In the open air, collections of bacteria are inclined to float along in a more or less concentrated mass, even in an apparent calm, and may be carried by very slight currents of air as far as 600 metres.

A somewhat similar series of experiments by DR. F. KIRSTEIN (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxv., p. 123) yielded results closely in agreement with those of Hutchison. Kirstein concludes that the ordinary air currents which occur in dwellings cannot detach living organisms from surfaces upon which they have become deposited and dried, but concedes that, when bacteria in culture media are sprayed upon fine dust particles, they may, in some instances, be disseminated, since dust is so readily blown about. Yet how slight the danger of this method of infection is, so far at least as typhoid fever is concerned, is shown by the marked rapidity with which the typhoid organisms die when sent forth in the form of spray. The longevity of organisms varies enormously, according as they are dried in compact masses or well spread out. The non-spore builders, when thrown into the air in the finest droplets, as when sprayed, retain their vitality for only a comparatively short time, because of the direct influence of light and air, the time varying, of course, according to species. The marked sensitiveness of the tubercle bacillus to the influence of light makes the early destruction of this organism most probable when it is thrown into the air in the form of minute droplets, and thus can be explained the fact that even in consumptive wards, in which there is without doubt a constant discharge of the bacilli into the air, attempts to detect living organisms in the dust, etc., fail, excepting in those cases in which the sputum itself has, through lack of care, become disseminated. In the same way can be explained why infection does not oftener occur among the associates of consumptives who constantly cough—chiefly because of the rapid death of the bacilli when exposed in the finest droplets.

Sanitary Significance of the Colon Bacillus in Drinking Water.—The truth of the assertion of W. Kruse that the colon bacillus is in no way characteristic of fecal matter, and exists everywhere, in the air, water, and soil, and of the statement of Miquel that one can always find it in water, provided a sufficient volume is examined, is, to a certain extent, borne out by a research conducted by DR. J. WEISSENFELD (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxv., p. 78) under the direction of Professor Kruse. Thirty waters of good character and twenty-six of bad were examined for the organism, and in every specimen it was found present, though the amount of water from which it could be isolated differed widely. With bad waters and with many good ones (from deep-driven wells for example) as well, the organism could be found in each cubic centimetre; but most of the good specimens yielded it only when large volumes were planted. The results of animal experimentation followed no rule. It happened sometimes that the bacilli from good waters were very pathogenic to guinea-pigs, while those from bad waters might be quite indifferent. Pathological and bacteriological examination of animals which were killed by cultures from good and bad waters revealed no differences, the results being the same in both classes as are observed in experiments with fecal bacteria. Hence it cannot be asserted that the finding of virulent colon bacilli in drinking-water necessarily indicates fecal contamination.

The Importance of Uncooked Vegetables in the Spread of Parasites and Infectious Diseases.—DR. G. CERESOLE (*Il Policlinico*, 1900–1901, p. 55) records additional evidence of the possible danger of the spread of parasites and infectious diseases through consumption of uncooked vegetables. He obtained lettuce, endives, radishes, and celery as sold in the market after the usual method of cleaning, and washed them in sterilized water. On examination of the sediment the microscope revealed an extensive fauna and flora. Among the objects observed were amœbæ, thread worms, eggs of tænia, oxyuris, and anchylostomum, and a great variety of micrococci, streptococci, staphylococci, bacilli, and sarcinæ. He isolated *B. coli communis*, a bacillus which agreed in characteristics with that of typhoid fever, the bacillus of tetanus, and *B. septicus*. As a precaution against danger, he advises that vegetables which are to be eaten uncooked be first washed and then immersed for half an hour in a 3 per cent. solution of tartaric acid, which agent has been shown to have the power to disinfect completely salad vegetables artificially infected with the spirillum of cholera.

Notice to Contributors.—All communications intended for insertion in the Original Department of this Journal are received only *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from abroad written in a foreign language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form will, if desired, be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. FRANCIS R. PACKARD, 1831 Chestnut Street, Philadelphia, U. S. A.
Or
DR. HECTOR MACKENZIE, 34 Upper Brook Street, Grosvenor Square, London, W., England.

CONTENTS.

ORIGINAL COMMUNICATIONS.

PAGE
Filarial Lymphatic Varix. By EUGENE L. OPIE, M.D. 251
Granular Degeneration of the Erythrocyte. By C. Y. WHITE, M.D., and WILLIAM PEPPER, M.D. 266
Report of an Interesting Case of Aneurism of the Internal Carotid Artery. By WALTER B. JOHNSON, M.D. 273
Hydatid Disease of the Breast. By ROBERT G. LE CONTE, M.D. 276
A Contribution to the Pathological Anatomy of Sporadic Cretinism. By FREDERICK A. PACKARD, M.D., and ALFRED HAND, JR., M.D. 289
Pseudomembranous Inflammation of the Mucous Membranes Caused by the Pneumococcus. By CHARLES CARY, M.D., and IRVING PHILLIPS LYON, M.D. 298
Acute Splenic Miliary Tuberculosis. By D. D. STEWART, M.D. 309
Note Upon a Case of Cardia Duplex in a Turkey. By ALLEN J. SMITH, M.D. . 317

REVIEWS.

A Practical Treatise on Diseases of the Skin. For the Use of Students and Practitioners. By James Nevins Hyde, A.M., M.D. 321
Pulmonary Consumption, Pneumonia, and Allied Diseases of the Lungs. By Thomas J. Mays, A.M., M.D. 322
Operative and Practical Surgery. For the Use of Students and Practitioners. By Thomas Carwardine, M.D. (Lond.), F.R.C.S. 324
The Blood and Its Diseases. By James Ewing, M.D. 325
Introduction to the Study of Medicine. By G. H. Roger, M.D. 326
Studies in Human and Comparative Pathology. By Woods Hutchinson, A.M., M.D. 327
Atlas and Epitome of Labor and Operative Obstetrics. By Oskar Schaeffer, M.D. 328
Anatomical Atlas of Obstetrics, with Special Reference to Diagnosis and Treatment 328
Atlas and Epitome of Ophthalmoscopy. By Prof. Dr. O. Haab 329
Text-book of the Practice of Medicine. By Dr. Hermann Eichhorst . . . 329
A Book of Detachable Diet Lists. By Jerome B. Thomas, A.B., M.D. . . . 330
A Text-book of Pharmacology and Therapeutics, or the Action of Drugs in Health and Diseases. By Arthur R. Cushny, M.A., M.D. 331

PROGRESS OF MEDICAL SCIENCE.

MEDICINE.

PAGE
Joint Affections in Scarlet Fever . 333
Typhoid Bacilli in the Blood . . 334
Bence-Jones' Albumosuria . . 334
PAGE
The Relation of Diabetes Mellitus to Lesions of the Pancreas . . . 336
Tuberculosis of the Pericardium . 337

SURGERY.

PAGE
Treatment of Joint Tuberculosis . 339
Urotropin 340
Enlargement of the Inguinal Glands 341
Contribution to Study of Hæmothorax 341
Urotropin as a Urinary Antiseptic . 341
Calculus of the Prostate . . . 342
Report of Brain Tumors and Cysts . 342
Röntgen Rays in Urinary Calculi . 344
PAGE
Spinal Cocainization in Surgery . 345
Luxation of Peroneous Tendons . 345
Hysterical Tympany 346
Luxation of the Median Nerve . . 346
Some Errors in Diagnosis in Conditions Resembling Appendicitis . 347
Treatment of Malignant Tumors by the Anticellular Serum of Wlaeff . 347